

UNITED STATES DISTRICT COURT
FOR THE
DISTRICT OF MASSACHUSETTS

_____)	
JOHN HANCOCK LIFE INSURANCE)	
COMPANY, JOHN HANCOCK)	
VARIABLE LIFE INSURANCE)	
COMPANY, and MANULIFE INSURANCE)	
COMPANY (f/k/a INVESTORS)	
PARTNER LIFE INSURANCE)	
COMPANY),)	CIVIL ACTION NO. 05-11150-DPW
)	
Plaintiffs,)	
)	
v.)	
)	
ABBOTT LABORATORIES,)	
)	
Defendant.)	
_____)	

AFFIDAVIT OF SCOTT S. HARTZ

I, Scott S. Hartz, hereby state under oath that:

1. My name is Scott S. Hartz. I reside in Duxbury, Massachusetts.
2. I currently serve as Executive Vice President and Chief Investment Officer of John Hancock Financial Services, Inc., the direct or indirect parent corporation of plaintiffs John Hancock Life Insurance Company, John Hancock Variable Life Insurance Company, and Manulife Insurance Company (f/k/a Investors Partner Life Insurance Company) (collectively referred to herein as "John Hancock" or "Hancock"). I previously held the position of Senior Investment Officer and Head Portfolio Manager of John Hancock's Bond and Corporate Finance Group ("BCFG"). I have been called to testify in this action concerning my

involvement in negotiating, evaluating and administering the written "Research Funding Agreement" that John Hancock entered into with defendant Abbott Laboratories ("Abbott") on March 13, 2001 (the "Research Funding Agreement" or the "Agreement"). This affidavit sets forth my direct trial testimony.

My Background

3. I attended Colby College and graduated in 1983 with a Bachelor's Degree in Economics and Physics.

4. I began work with John Hancock shortly after my graduation from Colby College. My first position with John Hancock was as an actuary in Hancock's Retail Life Insurance Marketing Support Group. I participated in John Hancock's rotational training program, which caused me to rotate to Hancock's Asset Liability Management Group.

5. Since joining John Hancock's BCFG in or about 1990, I have held successively more responsible positions within Hancock. From approximately 1998 to 2002, I served as a Senior Investment Officer, during which time I was responsible for ensuring that the various investment portfolios under BCFG's control and oversight were properly diversified, and that Hancock was in compliance with all relevant investment policies and guidelines for those portfolios. Since that time, I have been promoted to the positions of Vice President, Senior Vice President, and Executive Vice President, respectively, and my areas of responsibility have expanded to include other groups within John Hancock in addition to the BCFG.

6. I also am a Chartered Financial Analyst ("CFA") and a Fellow of the Society of Actuaries ("FSA").

My Involvement in John Hancock's Proposed Transaction with Abbott

7. In or about January 2000, I was asked by Stephen Blewitt, a Managing Director in John Hancock's BCFG, to review and help evaluate a proposed investment transaction with Abbott. As Mr. Blewitt explained to me at that time, John Hancock was considering making a significant investment in a portfolio or "basket" of pharmaceutical compounds that then were being developed by Abbott. A true and accurate copy of an e-mail message from Mr. Blewitt to me and Shannon Walsh, an analyst in my group at the time, about the proposed transaction, dated January 27, 2000, is attached hereto as PLs' KN.

8. As of 2000, I was Head Portfolio Manager of John Hancock's BCFG. My principal purposes in reviewing John Hancock's proposed transaction with Abbott were to ensure that the transaction was a proper fit for the various internal Hancock accounts that were expected to contribute to the investment, to ensure that the financial accounting for the proposed transaction worked, and to confirm that the expected return on the transaction was appropriate for the perceived level of risk.

9. I recall that Mr. Blewitt and I attended a meeting with representatives of Abbott to discuss John Hancock's proposed investment sometime in early 2000. I do not recall the names of the people who attended the meeting on Abbott's behalf. I do recall, however, that Abbott wanted John Hancock to make a total investment in the range of \$200 million. After that meeting, I thought that the proposed investment had sufficient merit to warrant further investigation and development by John Hancock.

10. Aside from my meeting with Abbott representatives in early 2000, I was not directly involved in the negotiation of the Research Funding Agreement between John Hancock and Abbott. Mr. Blewitt had primary responsibility within BCFG for handling those

negotiations. I was kept apprised of the status and terms of the proposed deal by Mr. Blewitt, however, as the negotiations progressed.

11. As the proposed deal with Abbott evolved, I knew that John Hancock's ability to earn a return on its investment in the proposed basket of Abbott pharmaceutical compounds would depend on the eventual commercial success of those compounds. If some or all of the compounds failed or otherwise were unsuccessful, John Hancock's financial return would be significantly diminished or eliminated entirely. That is why I and, based on my observations, Mr. Blewitt both were interested in a diversified basket of compounds from Abbott reflecting a variety of therapeutic indications, stages of development, and expected sales. I believed that diversification of the compounds provided an acceptable return on John Hancock's proposed investment with a reasonable overall level of risk.

12. In pursuing the proposed transaction with Abbott, it was my intention that John Hancock only invest in promising development candidates with positive commercial prospects. I did not intend to permit John Hancock to invest in compounds that Abbott knew or had reason to believe would be discontinued shortly.

13. Neither I, Mr. Blewitt, nor anyone else in John Hancock's BCFG was in a position, however, to independently know the current status, prospects or plans for each of the deal compounds within Abbott's pharmaceutical R&D organization. Therefore, John Hancock required that Abbott formally represent and warrant to Hancock the up-to-date condition of, and prospects for, the various compounds in the proposed basket.

14. During negotiations, I knew that Abbott provided Mr. Blewitt and others at John Hancock with a variety of technical, financial and other information concerning the proposed compounds. For example, I knew that Abbott provided "Descriptive Memoranda" describing

the various proposed compounds and their prospects. I did not review those Descriptive Memoranda myself, but I did review summaries of the Descriptive Memoranda that were prepared by Mr. Blewitt.

15. I knew that Abbott also provided information on its anticipated development spending on the proposed compounds in the form of projections and other documents that I, Mr. Blewitt and others at John Hancock utilized in evaluating those compounds.

16. I observed that, in approximately the spring of 2000, Mr. Blewitt and others at John Hancock created a detailed "Monte Carlo" computer model that they used to develop Hancock's projections and financial expectations for the proposed deal with Abbott. A Monte Carlo simulation generates numerous possible performance outcomes or scenarios that might occur in the future using a random number generator. It can account for the uncertainty and performance variation that is found in financial markets. The result of a Monte Carlo simulation is a probability distribution of portfolio gains and losses that can be used to determine the value and the risk of the portfolio.

17. John Hancock's Monte Carlo simulation entailed running multiple projected scenarios that assessed each Program Compound's commercial and scientific risk profile in order to calculate a combined risk-assessment and single expected rate-of-return on John Hancock's total investment, which information was used, in turn, by Hancock to determine what financial terms to demand in the Agreement, as well as whether to enter into the Agreement at all.

18. In many instances, John Hancock's Monte Carlo simulation incorporated more conservative projections than those provided by Abbott in the draft Descriptive Memoranda

and other materials provided to Hancock by Abbott, including lower peak sales projections for the proposed compounds.

19. Under John Hancock's Monte Carlo method of analysis, however, the elimination of even a single compound from the basket would have had a significant, adverse impact on the results of the analysis and the attractiveness of the deal from my perspective and, based on my observations, from the perspective of others at John Hancock.

20. Mr. Blewitt and other John Hancock personnel repeated the Monte Carlo simulation using updated data on numerous occasions while negotiations were underway. A true and accurate copy of an example of the output from one of John Hancock's early Monte Carlo simulations for the proposed deal with Abbott is attached hereto as PLs' KQ.

21. I reviewed John Hancock's Monte Carlo simulation model and the results obtained from that model while negotiations were underway in order to confirm that the model was properly constructed and that it yielded results that were, in my view, financially acceptable. More specifically, I ran the model myself and reviewed the appropriateness of the variables that Mr. Blewitt selected to use in the Monte Carlo simulation, including but not limited to probabilities of success, launch dates, credit ratings, discount rates, risk levels, target spreads and estimated sales of the proposed compounds. I also verified the accuracy of the model's calculations. I ultimately concluded that Mr. Blewitt had constructed the model correctly and had selected market-appropriate variables.

22. As I recall, refined iterations of John Hancock's Monte Carlo model indicated that, assuming the underlying data concerning the condition of, and prospects for, the compounds was reasonably accurate, the proposed deal could be expected to generate average annual returns to Hancock in the range of approximately eighteen to twenty-two percent (18-

22%), with a risk of total loss of approximately one to two percent (1-2%). These values were acceptable to me and caused me to agree with Mr. Blewitt's continued exploration and negotiation of the proposed transaction with Abbott.

23. As I recall, negotiations over the terms of the proposed agreement between John Hancock and Abbott continued into the fall of 2000. By September 2000, the basic terms of the proposed transaction with Abbott had solidified to the point that it was possible to submit the deal to John Hancock's management for approval in concept. John Hancock's internal procedures at the time required the approval of Hancock's Bond Investment Committee, as well as its Committee of Finance, before a deal of the size that we were considering with Abbott could proceed.

24. In approximately September 2000, I assisted Mr. Blewitt in preparing a report summarizing the proposed terms and the business rationale for the contemplated deal with Abbott (referred to internally and in this affidavit as a "Yellow Report") for submission to John Hancock's Bond Investment Committee and to the Committee of Finance. A true and accurate copy of that Yellow Report, dated September 21, 2000, is attached hereto as PLs' LF.

25. According to John Hancock standard practices at the time, the Yellow Report served as the principal, if not the only, document that Hancock's Bond Investment Committee and Committee of Finance reviewed in considering the Abbott transaction. Mr. Blewitt and I drafted the Yellow Report in reliance, to a large extent, on the information concerning the compounds that John Hancock had received from Abbott and on Hancock's Monte Carlo simulation. Based on the information that I had at the time, including my discussions with Mr. Blewitt, I believed that the information contained in the Yellow Report was reasonably

accurate, and that the assumptions and projections included in the Yellow Report were realistic and reasonably conservative.

26. The Yellow Report for the proposed Abbott transaction states, in part, that,

[w]e are recommending a \$220 million commitment to fund research and development expenses for a basket of eight pharmaceutical products ("Program Compounds") currently under development by Abbott Laboratories ("Abbott")....

The Program Compounds are a diversified pool of eight compounds owned by Abbott Laboratories and in various stages of clinical development. The Compounds are divided between late-stage and early-stage, including three Phase III, two Phase II, one Phase I, and two pre-clinical compounds. The compounds are well-diversified from a disease/stage perspective, although several compounds are focused on the cancer market.... During the term of the transaction, we expect Abbott to spend approximately \$1.3 billion (including John Hancock's commitment) on further research and development for the Compounds.

Through the management fee and anticipated milestone payments, we expect to generate at least an 8% return on investment during the initial four years of the transaction. The average return is approximately 17.5% over 15 years. If we assume that we could sell our future royalty stream after the fifth year, our average five-year IRR would be about 22%.

The transaction is structured to provide a one-to-two percent probability of total loss combined with a one-to-two percent chance of not earning a return. This is approximately equivalent to a 60 basis point annual loss over five years – or a "Ba1" credit rating. The expected return of 17.50% is attractive relative to the risk of the transaction.

27. Mr. Blewitt presented the proposed Abbott transaction to John Hancock's Bond Investment Committee on September 21, 2000. I attended the meeting. In the course of his presentation, Mr. Blewitt was asked various questions concerning the proposed structure of the transaction, the risk of the transaction, and the expected return for John Hancock on the

transaction. The Bond Investment Committee ultimately voted to approve the deal based on, and as recommended in, the Yellow Report.

28. Roger Nastou, then head of John Hancock's Bond and Corporate Finance Department, subsequently presented the Yellow Report for the proposed Abbott transaction to Hancock's Committee of Finance on October 10, 2000. As best I recall, I attended that meeting as well. The Committee of Finance also voted to approve the deal based on, and as recommended in, the Yellow Report. A true and accurate copy of the relevant minutes of the Committee of Finance, dated October 10, 2000, is attached hereto as PLs' LG.

29. I remember that after John Hancock's Bond Investment Committee and Committee of Finance approved the proposed transaction with Abbott, Abbott notified Hancock that it had discontinued the development of one of the proposed compounds. As I recall, I learned of the change from Mr. Blewitt. The news caused me concern. The elimination of just one compound from the portfolio materially altered the economics and attractiveness of the proposed deal from John Hancock's perspective. Of particular importance to me was the fact that the elimination of the compound significantly increased Hancock's risk of total loss. This problem eventually resulted in a several-month delay of the deal.

30. The proposed transaction with Abbott eventually moved forward again sometime in early 2001 when Abbott agreed to compensate John Hancock for the loss of the failed compound by adding one or more new compounds to the proposed basket of compounds. As I recall, Mr. Blewitt reviewed the information that Abbott supplied regarding the condition of, and prospects for, the new compounds, and confirmed that the inclusion of those compounds in John Hancock's Monte Carlo simulation model resulted in a sufficiently reduced level of risk. I further recall that the new compounds offered by Abbott were reasonably comparable to other

compounds with which Mr. Blewitt already was familiar, and that Abbott agreed that it would provide Hancock with a replacement for one or more of the new compounds if they later failed.

31. John Hancock's standard practice was to seek re-approval of a proposed transaction from the Bond Investment Committee and Committee of Finance only when a post-approval change materially affected the transaction in an adverse way. Because the proposed substitution of compounds did not appear to materially increase John Hancock's financial risk or decrease Hancock's expected rate of return, no re-approval was necessary.

32. I understand that John Hancock and Abbott entered into the final Research Funding Agreement on March 13, 2001.

My Subsequent Involvement with the Agreement

33. Under the accounting rules mandated by the Financial Accounting Standards Board ("FASB"), John Hancock is required to review its investment under the Agreement, and its assumptions concerning the likely results of that investment, every quarter that the Agreement remains in effect. My responsibilities at John Hancock since March 2001 have involved participating in, and overseeing, that review process.

34. At each review, various John Hancock personnel, including me, examine the status of the investment and determine whether the expected rate of return of an investment is different than originally anticipated. For example, John Hancock might determine that there has been a change in the expected rate of return because of, among other things, a change in the status of one or more compounds encompassed by the Agreement or the underlying markets.

35. Investment transactions that show a significant change in value over time are reviewed periodically by John Hancock's Loan Review Committee. The Loan Review Committee determines whether an investment should be "impaired" on Hancock's books to reflect a decrease in expected rate of return, so that Hancock's accounting records reflect, to the extent reasonably possible, the current value of the investment. As a senior member of John Hancock's BCFG, I typically participate in the Loan Review Committee meetings.

36. In early 2003, John Hancock's Loan Review Committee began to track and periodically evaluate the Abbott transaction because the potential value of the investment had significantly decreased due to certain compounds not performing as expected, and Abbott ceasing development of some of the compounds entirely. Later in 2003, Mr. Blewitt also informed me that Abbott's proposed expected spending for the remainder of the Program Term had fallen below the minimum required under the Agreement, and therefore Hancock's obligation to make its third and fourth-year Program Payments to Abbott had terminated.

37. On various occasions in and after 2003, John Hancock has re-evaluated and adjusted downward its expectations and financial projections for its investment under the Agreement. In doing so, Hancock typically has reduced the expected cash flow from the investment and taken a "write-down" of the book value of the investment for accounting purposes. At the present time, John Hancock has reduced the book value of that investment from a high of over \$110 million to \$10 million dollars (even though Hancock's total net investment in the Abbott transaction is approximately \$90 million). A true and accurate copy of an internal e-mail discussion among members of John Hancock's BCFG regarding one such write-down in January 2005 is attached hereto as PLs' OE.

*Information I Have Learned Since March 2001
About Abbott's Conduct and the Actual Status of Certain Compounds*

38. Since the execution of the Agreement on March 13, 2001, I have come to learn that the actual condition of, and prospects for, at least three of the compounds encompassed by that Agreement were materially different from what Abbott represented to Hancock. I also have come to learn that Abbott's plans for certain compounds were materially different from what Abbott represented to Hancock.

39. For example, it is my present understanding that Abbott: (a) actually halted development of one of the compounds the week before the Agreement was signed by the parties; (b) prematurely terminated a clinical trial of another compound due to the high number of patient drop-outs, and simultaneously reduced its planned spending on that compound in 2001 by more than seventy percent (70%); and (c) had undisclosed concerns about certain serious heart and liver side-effects potentially associated with yet another compound.

40. None of the foregoing facts was disclosed to me or, based on my observations, to others at John Hancock prior to the execution of the Research Funding Agreement.

41. The true condition of, and prospects for, the compounds encompassed by the Agreement was information material to my decision and, based on my observations, the decision of others at John Hancock, to recommend and to enter into the Agreement with Abbott on the terms stated therein.

42. Had Abbott informed me or others at John Hancock before the Agreement was signed of the true condition of, and prospects for, the compounds as I now understand them, that information would have significantly and adversely altered the economics and attractiveness of the proposed funding deal from my perspective. It would have reduced John

Hancock's expected return and increased Hancock's risk of total loss. I believe that, in such circumstances, I would not have recommended that John Hancock enter into the Agreement in its present form, and it is quite possible that I ultimately would not have recommended that Hancock enter into any funding agreement with Abbott at all.

43. If I had ceased to recommend that John Hancock enter into the proposed Agreement with Abbott at any time on or prior to March 13, 2001, on account of any actual or perceived problems concerning the condition of, or prospects for, any of the compounds, I am confident that Hancock would not have entered into that Agreement.

Signed under the pains and penalties of perjury this 28th day of January, 2008.

/s/ Scott S. Hartz
Scott S. Hartz

4294600.1

CERTIFICATE OF SERVICE

I hereby certify that this document is being filed with the Court through the ECF system and that a copy will be sent electronically to counsel for defendant through the ECF system on January 28, 2008.

/s/ Richard C. Abati
Richard C. Abati (BBO No. 651037)

PLs' KN

RE: Abbott

Page 1 of 1

From: Hartz, Scott [shartz@jhancock.com]
Sent: Thursday, January 27, 2000 9:49 AM
To: Blewitt, Stephen
Subject: RE: Abbott

I'll be there.

—Original Message—

From: Blewitt, Stephen
Sent: Thursday, January 27, 2000 9:47 AM
To: Hartz, Scott; Walsh, Shannon M.
Cc: Senatore, Lisa
Subject: Abbott



Phil Deemer (from Business Development) and Steve Cohen (from Pharmaceutical Products Division) from Abbott will be in on Friday, February 4, 10:30 - 1:30, to discuss the Pipeline Royalty transaction. Please let me know if you can attend. The agenda will cover Abbott's proposed basket of products; we will also want to discuss a preliminary term sheet and rate of return expectations.

Lisa, could you please arrange for a conference room (preferably the Center) and arrange for lunch at about noon?

Steve.

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PLs' KQ

Abbott

From: Stephen Blewitt [stephenblewitt@mediaone.net]
Sent: Sunday, April 02, 2000 10:24 PM
To: Blewitt, Stephen
Subject: Abbott

Steve,

Steve.

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Sheet1

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Sheet1

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154	0																														

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Sheet1

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364	0	1	0	1	1	1	0	0	0	0	0	3	0	0	95	247	570	970	1572	1830	2100	2220	2260	2015	1825	1635	1290
365	1	1	0	1	1	0	0	0	0	0	0	3	0	0	95	282	661	1160	1870	2270	2530	2600	2600	2315	2020	1760	1405
366	0	0	1	1	1	1	0	0	0	0	0	3	0	0	65	169	390	670	1092	1290	1500	1620	1660	1505	1375	1245	990
367	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
368	1	1	1	1	0	0	0	0	0	0	0	3	0	0	90	269	631	1110	1790	2180	2430	2500	2500	2230	1945	1695	1355
369	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
370	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
371	0	1	0	1	1	1	0	0	0	0	0	3	0	0	95	247	570	970	1572	1830	2100	2220	2260	2015	1825	1635	1290
372	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
373	1	1	0	1	1	1	0	0	0	0	0	3	0	0	95	282	661	1160	1870	2270	2530	2600	2600	2315	2020	1760	1405
374	1	0	1	1	1	1	0	0	0	0	0	4	0	0	65	204	481	880	1442	1850	2130	2320	2360	2205	1970	1770	1445
375	1	0	1	1	1	1	0	0	0	0	0	4	0	0	65	204	481	880	1442	1850	2130	2320	2360	2205	1970	1770	1445
376	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
377	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
378	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
379	0	1	1	1	1	0	0	0	0	0	0	3	0	0	125	325	750	1250	2000	2250	2500	2500	2500	2125	1875	1625	1250
380	1	0	1	1	1	0	0	0	0	0	0	0	0	0	65	204	481	860	1390	1730	1930	2000	2000	1805	1570	1370	1105
381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
382	1	0	1	1	1	0	0	0	0	0	0	3	0	0	65	204	481	860	1390	1730	1930	2000	2000	1805	1570	1370	1105
383	1	1	1	1	1	1	0	0	0	0	0	5	0	0	125	360	841	1480	2402	2930	3330	3520	3560	3225	2870	2550	2045
384	0	0	1	1	1	1	0	0	0	0	0	3	0	0	65	169	390	670	1092	1290	1500	1620	1660	1505	1375	1245	990
385	1	0	1	1	1	0	0	0	0	0	0	3	0	0	65	204	481	860	1390	1730	1930	2000	2000	1805	1570	1370	1105
386	0	1	1	1	1	0	0	0	0	0	0	3	0	0	125	325	750	1250	2000	2250	2500	2500	2500	2125	1875	1625	1250
387	1	1	0	0	0	0	0	0	0	0	0	2	0	0	60	191	451	810	1310	1640	1830	1900	1900	1720	1495	1305	1055
388	0	1	1	1	0	1	0	0	0	0	0	3	0	0	90	234	540	920	1492	1740	2000	2120	2160	1930	1750	1570	1240
389	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
390	0	1	1	1	1	1	0	0	0	0	0	4	0	0	125	325	750	1270	2052	2370	2700	2820	2860	2525	2275	2025	1590
391	1	0	1	1	0	0	0	0	0	0	0	2	0	0	30	113	271	510	830	1100	1230	1300	1300	1210	1045	915	755
392	1	0	1	0	0	0	0	0	0	0	0	2	0	0	30	113	271	510	830	1100	1230	1300	1300	1210	1045	915	755
393	0	0	0	0	1	0	0	0	0	0	0	1	0	0	35	91	210	350	560	630	700	700	700	595	525	455	350
394	1	1	1	1	0	0	0	0	0	0	0	3	0	0	90	269	631	1110	1790	2180	2430	2500	2500	2230	1945	1695	1355
395	0	0	1	1	1	1	0	0	0	0	0	3	0	0	65	169	390	670	1092	1290	1500	1620	1660	1505	1375	1245	990
396	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
397	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
398	1	1	1	1	1	0	0	0	0	0	0	4	0	0	125	360	841	1460	2350	2810	3130	3200	3200	2825	2470	2150	1705
399	1	1	1	1	0	1	0	0	0	0	0	4	0	0	90	269	631	1130	1842	2300	2630	2820	2860	2630	2345	2095	1695
400	1	0	1	1	1	1	0	0	0	0	0	4	0	0	65	204	481	880	1442	1850	2130	2320	2360	2205	1970	1770	1445
401	0	1	1	1	1	1	0	0	0	0	0	4	0	0	125	325	750	1270	2052	2370	2700	2820	2860	2525	2275	2025	1590
402	0	1	1	1	1	1	0	0	0	0	0	4	0	0	125	325	750	1270	2052	2370	2700	2820	2860	2525	2275	2025	1590
403	0	1	1	1	0	0	0	0	0	0	0	2	0	0	90	234	540	900	1440	1620	1800	1800	1800	1530	1350	1170	900
404	1	0	1	1	0	1	0	0	0	0	0	3	0	0	30	113	271	530	882	1220	1430	1620	1660	1810	1445	1315	1095
405	0	0	1	1	0	1	0	0	0	0	0	2	0	0	30	78	180	320	532	660	800	920	960	910	850	790	640
406	1	0	1	1	0	1	0	0	0	0	0	3	0	0	30	113	271	530	882	1220	1430	1620	1660	1810	1445	1315	1095
407	1	1	0	0	0	1	0	0	0	0	0	3	0	0	60	191	451	830	1362	1760	2030	2220	2260	2120			

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CONFIDENTIAL
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Sheet1

25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
16%	-50	-50	-45.2	-37.52	28.8	40	54.4	56.8	58	58	58	56.2	52	47.2	40
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
0%	-50	-50	-50	-50	0	1.6	4.16	9.6	16	25.6	28.8	32	32	32	27.2
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
-100%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
-100%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
0%	-50	-50	-50	-50	0	1.6	4.16	9.6	16	25.6	28.8	32	32	32	27.2
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
12%	-50	-50	-47.6	-43.76	14.4	25.6	37.28	42.4	48	52.8	54.4	52.4	50	47.6	41.6
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
-100%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54

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20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
0%	-50	-50	-50	-50	0	1.6	4.16	9.6	16	25.6	28.8	32	32	32	27.2
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-42.4	-27.44	42.44	57.8	65.22	69.9	73.3	75.2	75.6	73.15	70.2	67.6	63.45
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
16%	-50	-50	-45.2	-37.52	28.8	40	54.4	56.8	58	58	58	56.2	52	47.2	40
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
-100%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45

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20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
17%	-50	-50	-45.2	-37.52	28.8	40.8	58.12	58	60	61.2	61.6	60.2	59	57.8	53.6
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	38.4	34	31.2	24
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
20%	-50	-50	-45.2	-34.72	34.04	49.2	59.62	63.6	66.3	68.2	68.6	67.2	64.95	63.05	59.95
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
25%	-50	-50	-40	-21.2	49.64	60.6	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
16%	-50	-50	-45.2	-37.52	28.8	40	54.4	56.8	58	58	58	56.2	52	47.2	40
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-45.2	-34.72	34.04	49.2	59.62	63.6	66.3	68.2	68.6	67.2	64.95	63.05	59.95
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
23%	-50	-50	-42.4	-27.44	42.44	57.8	65.22	69.9	73.3	75.2	75.6	73.15	70.2	67.6	63.45
16%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6

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11%	-50	-50	-50	-47.2	7.28	18.4	32.08	43.2	49.2	56.2	56.6	57	55.8	53	47.8
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
13%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	50.2	43.6
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
8%	-50	-50	-50	-47.2	7.28	16.8	28	38.4	41.2	44	44	39.8	37	34.2	28
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	64.05	61.7	59.7	57.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
13%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	50.2	43.6
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45

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17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	81	62.2	62.6	61.05	59.75	58.45	55.6
20%	-50	-50	-45.2	-34.72	34.04	49.2	59.62	63.6	66.3	68.2	68.6	67.2	64.95	63.05	59.95
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
20%	-50	-50	-42.8	-31.28	37.6	52.8	60.92	63.4	66	67.2	67.6	65.3	63.5	61.7	58.4
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
16%	-50	-50	-45.2	-37.52	28.8	40	54.4	56.8	58	58	58	56.2	52	47.2	40
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	75.2	75.6	73.15	70.2	67.6	63.45
23%	-50	-50	-42.4	-27.44	42.44	57.8	65.22	69.9	73.3	75.2	75.6	73.15	70.2	67.6	63.45
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
18%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
8%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	61.3	61.3	61.3	61.3	61.3	61.3
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
16%	-50	-50	-45.2	-37.52	28.8	40	54.4	56.8	58	58	58	56.2	52	47.2	40
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	61.3	61.3	61.3	61.3	61.3	61.3
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5

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20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
10%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	34.2	28
13%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	34.2	28
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
11%	-50	-50	-50	-47.2	7.28	18.4	32.08	43.2	49.2	56.2	56.6	57	55.8	53	47.8
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
11%	-50	-50	-50	-47.2	7.28	18.4	32.08	43.2	49.2	56.2	56.6	57	55.8	53	47.8
0%	-50	-50	-50	-50	0	1.6	4.16	9.6	16	25.6	28.8	32	32	32	27.2
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
22%	-50	-50	-42.4	-27.44											

Sheet1

16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
12%	-50	-50	-47.6	-43.76	14.4	25.6	37.28	42.4	48	52.8	54.4	52.4	50	47.6	41.6
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
20%	-50	-50	-45.2	-34.72	34.04	49.2	59.62	63.6	66.3	68.2	68.6	67.2	64.95	63.05	59.95
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
23%	-50	-50	-42.4	-27.44	42.44	57.8	65.22	69.9	73.3	75.2	75.6	73.15	70.2	67.6	63.45
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
9%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
8%	-50	-50	-50	-47.2	7.28	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2
13%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	50.2	43.6
18%	-50	-50	-44.8	-36.48	31.2	42.8	56.92	58.9	61	62.2	62.6	61.05	59.75	58.45	55.6
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
0%	-50	-50	-50	-50	0	1.6	4.16	9.6	16	25.6	28.8	32	32	32	27.2
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
10%	-50	-50	-47.2	-42.72	16.8	28	38.4	41.2	44	44	44	39.8	37	34.2	28
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
22%	-50	-50	-42.8	-28.48	41.24	57.3	64.42	69	72.3	74.2	74.6	72.3	69.45	66.95	62.95
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
19%	-50	-50	-45.2	-34.72	34.04	48.4	59.1	62.4	64.3	65	65	63.2	60.95	59.05	56.55
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
13%	-50	-50	-47.2	-42.72	16.8	29.6	40.48	46	52	56.2	56.6	55.8	53	50.2	43.6

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Sheel1

21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
20%	-50	-50	-44.8	-33.68	35.24	51.2	60.42	64.5	67.3	69.2	69.6	68.05	65.7	63.7	60.45
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
23%	-50	-50	-40	-24	46	58.5	66	68.5	71	71	71	67.25	64.75	62.25	58.5
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
21%	-50	-50	-42.4	-30.24	38.8	54.8	61.72	64.3	67	68.2	68.6	66.15	64.25	62.35	58.9
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
25%	-50	-50	-40	-21.2	49.64	60.8	70.02	75.3	79.3	81.2	81.6	78.25	74.7	71.5	66.45
20%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
-100%	-50	-50	-50	-50	0	0	0	0	0	0	0	0	0	0	0
16%	-50	-50	-47.6	-40.96	21.68	36.4	49.2	57	58.3	59	59	58.1	56.45	52.6	46.2
22%	-50	-50	-42.8	-28.48	41.24	57.1	63.9	67.8	70.3	71	71	68.3	65.45	62.95	59.55
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
18%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
16%	-50	-50	-42.8	-31.28	37.6	52	60.4	62.2	64	64	64	61.3	59.5	57.7	52
20%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
16%	-50	-50	-47.6	-40.96	21.68	37.2	51.28	58.2	60.3	62.2	62.6	62.1	60.45	59.15	56.95
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
17%	-50	-50	-47.2	-39.92	24.08	39.2	54.48	59.1	61.3	63.2	63.6	62.95	61.2	59.8	57.45
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
23%	-50	-50	-42.4	-27.44	42.44	57.8	65.22	69.9	73.3	75.2	75.6	73.15	70.2	67.6	63.45
20%	-50	-50	-42.4	-30.24	38.8	54	61.2	63.1	65	65	65	62.15	60.25	58.35	54
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
22%	-50	-50	-42.4	-27.44	42.44	57.6	64.7	68.7	71.3	72	72	69.15	66.2	63.6	60.05
17%	-50	-50	-44.8	-36.48	31.2	42	56.4	57.7	59	59	59	57.05	55	49.8	42
12%	-50	-50	-47.6	-43.76	14.4	24	35.2	37.6	40	40	40	36.4	34	31.2	24
9%	-50	-50	-47.6	-43.76	14.4	25.6	37.28	42.4	48	52.8	54.4	52.4	50	47.6	41.6
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
25%	-50	-50	-40	-21.2	49.64	60.6	69.5	74.1	77.3	78	78	74.25	70.7	67.5	63.05
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9
12%	-50	-50	-47.6	-43.76	14.4	25.6	37.28	42.4	48	52.8	54.4	52.4	50	47.6	41.6
16%	-50	-50	-47.2	-39.92	24.08	38.4	52.4	57.9	59.3	60	60	58.95	57.2	55.2	48.2
17%	-50	-50	-45.2	-37.52	28.8	40.8	56.12	58	60	61.2	61.6	60.2	59	57.8	53.6
20%	-50	-50	-44.8	-33.68	35.24	50.4	59.9	63.3	65.3	66	66	64.05	61.7	59.7	57.05
23%	-50	-50	-40	-24	46	58.7	66.52	69.7	73	74.2	74.6	71.25	68.75	66.25	61.9

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PLs' LF

JOHN HANCOCK LIFE INSURANCE COMPANY**Bond & Corporate Finance Group**

Report Date: September 21, 2000

Recommendation to B.I.C.: September 21, 2000

Report to C.O.F.: October 10, 2000

Private

Purchase Recommendation

GBSA \$110 mm	GBRE \$20 mm
CLDBLK \$ 30 mm	OPNBLK \$ 4 mm
PENPAR \$ 9 mm	IQA \$15 mm
LOLA \$ 8 mm	GRPLTC \$ 4 mm
RETLTC \$ 7 mm	GRPINS \$ 2 mm
BOLI \$ 4 mm	UNVRSL \$ 5 mm
IPLI \$ 2 mm	

ABBOTT LABORATORIES ("Non-Recourse")
North Chicago, IL

We are recommending a \$220 million commitment to fund research and development expenses for a basket of eight pharmaceutical products ("Program Compounds") currently under development by Abbott Laboratories ("Abbott"). The commitment will be funded over a four-year period and will be subject to Abbott Laboratories co-funding at least two times our commitment on the Program Compounds during the same period of time. In return for the research and development payments, Abbott will agree to pay John Hancock milestone and royalty payments for each Compound that reaches regulatory approval and has commercial sales. The purpose of this transaction is to allow Abbott to increase its expenditures on research and development (to generate future growth in revenues and earnings) but to maintain current earnings.

The Program Compounds are a diversified pool of eight compounds owned by Abbott Laboratories and in various stages of clinical development. The Compounds are divided between late-stage and early-stage, including three Phase III, two Phase II, one Phase I, and two pre-clinical compounds. The Compounds are well-diversified from a disease/stage perspective, although several compounds are focused on the cancer market. Even within the cancer market, though, each of the Compounds targets either different types of cancer, or different mechanisms of action. Based on their current stage of development and projected sales levels, we think that the Program Compounds have a current market value of approximately \$1 billion. During the term of the transaction, we expect Abbott to spend approximately \$1.3 billion (including John Hancock's commitment) on further research and development for the Compounds.

Through the management fee and anticipated milestone payments, we expect to generate at least an 8% return on investment during the initial four years of the transaction. The average return is approximately 17.5% over 15 years. If we assume that we could sell our future royalty stream after the fifth year, our average five-year IRR would be about 22%.

The transaction is structured to provide a one-to two percent probability of total loss combined with a one-to-two percent chance of not earning a return. This is approximately equivalent to a 60 basis point annual loss over five years - or a "Ba1" credit rating. The expected return of 17.50% is attractive relative to the risk of the transaction.

Report Authors:

Stephen J. Blewitt, Managing Director

Scott Hartz, Managing Director

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**DEPOSITION
EXHIBIT**

15
11/17/06 HK

JOHN HANCOCK LIFE INSURANCE COMPANY**Bond & Corporate Finance Group**

Report Date: September 21, 2000

Recommendation to B.I.C.: September 21, 2000

Report to C.O.F.: October 10, 2000

Private

Purchase Recommendation

GBSA	\$110 mm	GBRE	\$20 mm
CLDBLK	\$ 30 mm	OPNBLK	\$ 4 mm
PENPAR	\$ 9 mm	IQA	\$15 mm
LOLA	\$ 8 mm	GRPLTC	\$ 4 mm
RETLTC	\$ 7 mm	GRPINS	\$ 2 mm
BOLI	\$ 4 mm	UNIVRSL	\$ 5 mm
IPLI	\$ 2 mm		

ISSUER: Abbott Laboratories (Non-recourse)

ISSUE: \$220 million Research and Development Funding Commitment

ISSUE RATING: JH: Ba2

BROKER: Direct

SIC CODE: 2830 - Drugs

USE OF PROCEEDS: To fund the research and development of eight pharmaceutical products ("Program Compounds") owned Abbott, and to pre-fund management fees and projected milestone payments, and to pay for transaction and administrative expenses.

STATE OF INC.: Illinois

CIRCLE DATE: August 31, 2000

TAKEDOWN DATE: Upon completion of documentation

PROGRAM PAYMENTS: During the Program Term, and in consideration of Abbott's continuing performance of the research services under the Research Plan, John Hancock shall make program payments to Abbott in the installments and on the dates set forth below:

<u>Date</u>	<u>Payment</u>
[December,] 2000	\$50,000,000
[December,] 2001	\$55,000,000
[December,] 2002	\$55,000,000
[December,] 2003	\$60,000,000

"Program Term" means the period commencing [December,] 2000 Date and ending on [December,] 2004.

"Research Plan" means a detailed statement of Abbott's objectives, activities, timetable, FTE allocation and budget for the Program Compounds during the Program Compounds during each year of the Program Term. Abbott shall provide an updated research plan on an annual basis.

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Abbott Obligations

During the Program Term, Abbott agrees to spend, in addition to the funds provided by John Hancock, (i) a minimum of \$50 million per year and (ii) a minimum of \$400 million in aggregate on research and development programs associated with the Program Compounds.

Program Payment Termination Provisions

Unless the parties agree upon an alternative arrangement, if Abbott (a) ceases research and development of all Program Compounds or (b) does not spend at least the amount provided by John Hancock in a year on the research and development of Program Compounds or (c) does not reasonably demonstrate, in its updated research plan, its intent to spend a minimum of the amount provided by John Hancock in the next year of the Program Term or \$620 million (including the funds provided by John Hancock) in aggregate, John Hancock's obligation to continue to make Program Payments shall cease. In the case of either (a) or (b) above, Abbott will refund to John Hancock \$55 million minus half of the amount actually spent by Abbott during that year.

Carryover Provisions

If Abbott spends the amount provided by John Hancock in a year but does not spend at least an additional \$50 million, Abbott agrees to spend the difference between \$105 million and the amount actually spent in that year (the "Carryover Amount") in the subsequent year. John Hancock's obligation to make Program Payments in the subsequent year, if any, will be deferred until that time that Abbott demonstrates that it has spent the Carryover Amount in that subsequent year.

If Abbott spends the amount provided by John Hancock in each year and at least an additional \$50 million in each year, but does not spend a minimum of \$620 million (including the funds provided by John Hancock) in aggregate on research and development programs associated with the Program Compounds during the Program Term, Abbott agrees to spend the difference between \$620 million and the aggregate amount actually spent (the "Aggregate Carryover Amount") in the subsequent year. If Abbott does not spend the Aggregate Carryover Amount in the subsequent year, Abbott will refund to John Hancock one-third of the difference between (a) \$620 million and the amount actually spent.

MANAGEMENT FEE:

Commencing with the first anniversary of the Program Term and continuing until the end of the Program Term, Abbott shall pay John Hancock a fee in the amount of \$2.0 million per year as compensation for monitoring Abbott's continuing performance of its research services under the Research Plan, the development of the Program Compounds, and to reimburse John Hancock for its ongoing fees and expenses incurred in connection with this transaction.

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MILESTONE PAYMENTS:

Abbott shall make the following payments for each compound for each milestone achieved after commencement of the Program Term:

Upon the allowance of an IND application by the FDA: \$1,000,000
 Upon the initiation of a Phase I Clinical Trial: \$2,000,000
 Upon the initiation of a Phase II Clinical Trial: \$3,000,000
 Upon the initiation of a Phase III Clinical Trial: \$4,000,000
 Upon the filing of an NDA application with the FDA: \$5,000,000
 Upon NDA Approval by the FDA: \$10,000,000

Aggregate milestone payments paid by Abbott, for all "non-NDA Approval" milestones achieved will not exceed \$12 million. Aggregate milestone payments paid by Abbott, for all "NDA Approval" milestones achieved will not exceed \$40 million. In addition, "non-NDA Approval" milestone payments will not exceed \$3 million in the first year or \$6 million in the second year after commencement of the Program Term.

ROYALTY PAYMENTS:

Abbott shall pay to John Hancock royalties on aggregate worldwide Net Sales of Program Compounds (all Program Compound sales combined) at the following rates:

<u>Annualized Net Sales of Aggregate Program Compounds</u>	<u>Royalty Rate</u>
\$0 to \$400 million	8%
>\$400 million and ≤ \$1,000 million	4%
>\$1,000 million and ≤ \$2,000 million	1%
>\$2,000 million	½%

The obligation to make royalty payments shall commence on the date of the First Commercial Sale of a Program Compound and shall continue with respect to Net Sales of such Program Compound for a period of ten years. Notwithstanding the foregoing, the obligation to make royalty payments on all Program Compounds shall not begin until after the second anniversary of the Program Term and shall cease at December 31, 2014.

HANCOCK HOLDINGS:

None

RELATED HOLDINGS:

\$29,000,000 Preferred Stock of Metabolex Corporation with Put Rights to Abbott

ANALYST:

Stephen J. Blewitt

HOUSE COUNSEL:

Amy Weed

SPECIAL COUNSEL:

Choate, Hall & Stewart

Report Authors:

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TRANSACTION OVERVIEW

In December 1999, John Hancock approached Abbott Laboratories, Inc. ("Abbott") with a financial structure that would allow Abbott to increase its research and development expenditures (to generate future growth in revenues and earnings) but maintain current earnings. The structure, which is presented in this investment recommendation, uses probability analysis on a diversified portfolio of drug compounds, supplemented by scientific due diligence, to achieve an investment grade or near investment grade risk for John Hancock and allow us to generate equity returns in the form of current (royalty) income for a sizeable investment.

This transaction requires John Hancock to commit to funding an average of \$55 million per year for a period of four years to fund the research and development of a diversified pool of eight compounds ("Program Compounds") owned by Abbott Laboratories. We have valued the Program Compounds today at approximately \$1 billion (or five times our investment) and we expect Abbott to spend over seven times our investment during the term of the transaction (during the initial four year period, Abbott will commit two times John Hancock's investment for those compounds). In return for the research and development payments, Abbott will agree to pay John Hancock milestone and royalty payments for each compound that reaches regulatory approval and has commercial sales as well as a management fee.

Through the management fee and anticipated milestone payments, we expect to generate at least an 8% return on investment during the initial four years of the transaction. The average return is approximately 17.5% over 15 years. If we assume that we could sell our future royalty stream after the fifth year, our average five-year IRR would be about 22%.

This transaction is consistent with our approach to investing in the pharmaceutical sector. During the past five years, we have invested approximately \$460 million in pharmaceutical companies. Approximately \$300 million is invested in straight debt for investment grade companies. The remaining \$160 million is invested in equity-oriented transactions where we think that there are opportunities for exceptional value. Although we have invested in a couple of straight equity transactions, approximately \$150 million of the \$160 million is invested in transactions where our downside risk is protected by either "put rights" to investment grade companies (Metabolex, Nexell), senior note positions (Celgene, Cubist), or structured portfolios of drug candidates (Pharma Marketing). In these transactions, we maintain sizable up-side potential but reduce the probability of losing all of our invested capital through the structure of our investment.

In summary, we think that the structure of this transaction, which has us co-investing with Abbott Laboratories in a diversified pool of their drug compounds, which we believe have a current value of approximately \$1 billion, over a four year period, during which time Abbott has to meet co-investment obligations and the drug compounds need to continue to progress in development, allows us to generate substantial current income that exceeds the risk associated with the transaction. Although we are committing to a substantial \$220 million investment, our expectation is that our net investment will not exceed \$176 million (due to management fees, milestone payments, and royalty payments).

The transaction is structured to provide a one-to-two percent probability of total loss combined with a one-to-two percent chance of not earning a return. This is approximately equivalent to a 60 basis point annual loss over five years — or a "Ba1" credit rating. The expected return of 17.50% is attractive relative to the risk of the transaction.

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Expected accounting treatment

There have been a number of royalty streams sold off in the form of an asset backed security. The most visible example is the David Bowie bond bought by Prudential Insurance. While this royalty transaction has many similar features, it is also different in that it is funded over a four year period and no royalties are currently being generated. We believe that at the end of the funding period we will be able to obtain a rating on the transaction that will allow it to be placed on our bond schedule. In the meantime, it will appear on our BA schedule. We plan to account for this investment using the guidance in ruling 9920 of the Emerging Issues Task Force. Ruling 9920 requires that each year, or more often if the assumptions change, we will project the expected cash flows and book income equal to the internal rate of return. Any changes to the expected cash flows will be spread over the remaining life of the transaction through the newly calculated IRR. This is the same method we use to account for our CBO equity investments. Initially we expect the IRR on this investment to be approximately 17%.

OVERVIEW OF ABBOTT LABORATORIES

Abbott Laboratories is engaged in the discovery, development, manufacture and sale of healthcare products and services. Abbott has five reporting revenue segments: Pharmaceutical Products, Diagnostic Products, Hospital Products, Ross Products and International. It also has a 50%-owned joint venture, TAP Holdings, Inc. The principal products of the Pharmaceutical Products Division are the anti-infectives clarithromycin, agents for the treatment of epilepsy, migraine and bipolar disorder, including Depakote; urology products, including Flomax for the treatment of BPH; Abbokinase, a thrombolytic drug, and the anti-viral Norvir, a protease inhibitor for the treatment of HIV. The Diagnostic Division's products include diagnostic systems and tests for blood banks, hospitals, and commercial laboratories. The Hospital Products Division sells drugs and drug delivery systems, intensive care products, cardiovascular products, renal products, and intravenous and irrigation solutions. The Ross Products Division sells adult and pediatric nutritionals such as Similac, Isomil, Ensure, Glucerna, and Pedialyte. The International Division's products include a broad line of hospital, pharmaceutical, and adult and pediatric nutritional products marketed and primarily manufactured outside the United States.

For the year ended December 31, 1999, Abbott had revenues and net income of approximately \$13.2 billion and \$2.4 billion, respectively. Abbott is rated "Aaa" by the major rating agencies. As of September 18, 2000, Abbott had a market capitalization of approximately \$74 billion.

**ABBOTT LABORATORIES
CONSOLIDATED STATEMENT OF OPERATIONS**

(\$ in thousands)	Fiscal Years Ended December 31,		
	1997	1998	1999
Net Sales	\$11,889	\$12,512	\$13,177
Costs and expenses:			
Cost of goods sold	5,052	5,406	5,977
Selling, general and administrative	2,695	2,759	2,857
Research and development	1,307	1,228	1,193
Total operating expenses	9,055	9,395	10,028
Operating income	2,833	3,117	3,149
Net interest expense	85	102	81
Other charges	(186)	(223)	(330)
Income (loss) before taxation	2,934	3,241	3,396
Net income (loss)	\$2,079	\$2,331	\$2,445

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TRANSACTION DETAILS**A. PROGRAM COMPOUNDS**

There are eight Program Compounds included in this transaction. The Compounds are divided between late-stage and early-stage, including three Phase III, two Phase II, one Phase I, and two pre-clinical compounds. The Compounds are well-diversified from a disease/stage perspective, although several compounds are focused on the cancer market. Even within the cancer market, each of the Compounds targets either different types of cancer, or different mechanisms of action. The products are described more fully below:

Product	Indication	JH Est. Peak Sales (\$mm)	Stage of Development
ABT 980 (BPH)	Treatment of benign prostatic hyperplasia	600	Development Stage: Phase III Expected Launch: 2003
ABT 773 (Ketolide)	Antibiotic	800	Development Stage: Phase III Expected Launch: 2003
ABT 627 (Endothelin)	Treatment of prostate cancer	700	Development Stage: Phase III Expected Launch: 2003
ABT 594 (CCM)	Non-opioid, non-NSAID analgesic	700	Development Stage: Phase II Expected Launch: 2004
E7010 (Anti-mitotic)	Cancer	500	Development Stage: Phase III Expected Launch: 2004
MMP1	Cancer	400	Development Stage: Phase I Expected Launch: 2005
FT1	Cancer	400	Development Stage: Pre-clinical Expected Launch: 2005
Urokinase	Cancer	400	Development Stage: Pre-clinical Expected Launch: 2005

B. SUMMARY OF ESTIMATED SALES

In estimating sales projections by Program Compound, we started with determining the expected peak sales for each Compound. We have conservatively estimated the peak sales for each Compound based on our evaluation of market potential for each Compound relative to results for other similar drugs and expected competitive drugs. In general, our level of peak sales is significantly below Abbott's level (approximately 25%) – but, because of the tiered royalty structure, the relative economic difference is not significant. Our next step was to use a Sales Curve calculated by Lehman Brothers that projects ramp-up and ramp-down for sizeable drugs. In general, this Curve shows peak sales being reached seven years after launch. Ramp-up is achieved by 5% of peak sales in the first year, followed by 13%, 25%, 50%, 80%, and 90%. Peak sales are maintained for three years, and the compound then achieves 85% of peak, 75%, 70%, etc. As expected, every compound has its own unique curve, and Lehman's is only a general estimate. We have compared the curve to IMS data of prescription sales for individual compounds in a number of drug classes from 1981 to 1999. Our analysis indicates that Lehman's curve is a good fit and we have applied that curve. The table below shows projected sales for each Compound and probability-weighted estimated sales for the entire portfolio of Compounds.

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ESTIMATED SALES PROJECTION

(\$ in millions) Name	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<u>Projected Sales</u>												
ABT-980 (BPH)	30	78	180	300	480	540	600	600	600	510	0	0
ABT-627 (Endothelin)	35	91	210	350	560	630	700	700	700	595	0	0
ABT-773 (Ketolide)	40	104	240	400	640	720	800	800	800	680	0	0
ABT-594		35	91	210	350	560	630	700	700	700	595	0
E7010 (Anti-mitotic)		20	52	120	200	320	360	400	400	400	340	0
MMPI												
FTI			20	52	120	200	320	360	400	400	400	340
Urokinase												
Total Projected Sales	105	328	793	1,432	2,350	2,970	3,410	3,560	3,600	3,285	1,335	340
Estimated Sales	76	225	531	932	1,510	1,837	2,068	2,129	2,138	1,908	530	74

For projection purposes, MMPI, FTI and Urokinase are considered as one Program Compound with a Phase I probability of success.

C. MILESTONE AND ROYALTY PAYMENTS

Under the Agreement, Abbott agrees to pay to John Hancock royalties on aggregate worldwide Net Sales of Program Compounds (all Program Compound sales combined) at the following rates: 8% on the first \$400 million, 4% on the next \$600 million, 1% on the next \$1 billion, and ½% on any amount above \$2 billion. Abbott's obligation to make royalty payments will commence on the date of the First Commercial Sale of a Program Compound and will continue with respect to Net Sales of such Program Compound for a period of ten years. Notwithstanding the foregoing, the obligation to make royalty payments on all Program Compounds will not begin until after the second anniversary of the Program Term and will cease at December 31, 2014. Based on our estimate of aggregate sales for the Program Compounds, we expect the following amounts of Royalty Payments:

(\$ in millions) Name	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimated Sales	76	225	531	932	1,510	1,837	2,068	2,129	2,138	1,908	530	74
Royalty Payments												
8.0% on \$400 mm	6	18	32	32	32	32	32	32	32	32	32	6
4.0% on \$400-\$1,000	0	0	5	21	24	24	24	24	24	24	5	0
1.0% on \$1,000 - \$2,0	0	0	0	0	5	8	10	10	10	9	0	0
0.5% on \$2,000+	0	0	0	0	0	0	0	1	1	0	0	0
Total Royalty Pymts	6	18	37	53	61	64	66	67	67	65	37	6
(average percent)	8.0%	7.0%	5.7%	4.0%	3.5%	3.2%	3.1%	3.1%	3.1%	3.4%	7.0%	8.0%

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In addition to the Royalty Payments, Abbott will be obligated to make payments to John Hancock for certain milestones achieved for each compound. The milestone and the corresponding payments are described below. Aggregate milestone payments paid by Abbott, for all "non-NDA Approval" milestones achieved will not exceed \$12 million. Aggregate milestone payments paid by Abbott, for all "NDA Approval" milestones achieved will not exceed \$40 million. In addition, "non-NDA Approval" milestone payments will not exceed \$3 million in the first year or \$6 million in the second year after commencement of the Program Term.

Upon the allowance of an IND application by the FDA:	\$ 1,000,000
Upon the initiation of a Phase I Clinical Trial:	\$ 2,000,000
Upon the initiation of a Phase II Clinical Trial:	\$ 3,000,000
Upon the initiation of a Phase III Clinical Trial:	\$ 4,000,000
Upon the filing of an NDA application with the FDA:	\$ 5,000,000
Upon NDA Approval by the FDA:	\$10,000,000

Based on the number of Compounds in the Program and the number of potential milestones for each Compound, we expect to receive \$3 million, \$6 million, and \$3 million of "non-NDA" milestone payments in the first three years. In addition, we expect to receive \$20 million in 2003 and \$10 million in 2004 for NDA Approvals.

In aggregate, the management fees, milestone payments, and royalty payments are approximately 4.3% of Net Sales of the Program Compounds. The tiered structure of the royalty payments and the up-front milestone payments, however, substantially reduce the downside of the transaction in the event that aggregate net sales are below our expected case. For example, if sales were 25% below projected, a flat 4.3% royalty rate would yield a loss ratio of 4% versus a loss ratio of 1.6% when using the tiered structure.

D. ESTIMATED CASH FLOW PROJECTIONS

Based on the calculations of Net Sales and Milestone and Royalty Payments, which are described above, the Cash Flow of this transaction is as presented in the table below. In particular, the structure provides for adequate current income during the first two-to-three years when there are no approved Compounds, and substantial current royalty income based on Net Sales of approved Compounds.

(\$ in millions)		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Name																
JH Cash Payments	(50)	(55)	(55)	(60)												
Management Fee	0	2	2	2	2											
Milestone Payments	0	3	6	23	10											
Royalty Payments	0	0	0	6	18	37	53	61	64	66	67	67	65	37	6	
Aggregate Cash Rcv'd	0	5	8	31	30	37	53	61	64	66	67	67	65	37	6	
JH Net Cash Flow	(50)	(50)	(47)	(29)	30	37	53	61	64	66	67	67	65	37	6	

The projected bond equivalent yield for this transaction is approximately 17.5% and the cash to invested capital ratio is 2.7 times.

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E. SUMMARY BUDGET

Abbott will be using the funds from this transaction to invest in the research and development of a specific pool of drug compounds, and to pre-fund management fees and projected milestone payments. These funds will be part of a total investment by Abbott of approximately \$1,300 million during the next ten years and \$900 million over the four year co-investment period. In addition, based on the stage of the development of the Program Compounds, and their expected sales, we have valued the Program Compounds today at approximately \$1 billion. Our valuation is based on our knowledge of "out-licensing" transactions between pharmaceutical companies and the milestone and royalty structure that is market for different stage compounds. In general, out-license transactions provide the licensor with a royalty rate of between 10% (for Phase I compounds) to 30% (for Phase III compounds) and a 50/50 split for compounds that have completed Phase III. Using an average 20% royalty applied to estimated sales and a 15% discount rate, we arrived at a value of approximately \$1 billion.

The following table summarizes the Company's expected budget during the Program Period:

(\$ in millions)	Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
<u>Projected Budget</u>													
	ABT-980 (BPH)	80	40	30	30	20	20	10	10	10	10	10	270
	ABT-627 (Endothelin)	40	40	20	20	20	20	20	10	10	10	10	220
	ABT-773 (Ketolide)	135	60	42	42	27	27	27	17	17	17	17	428
	ABT-594	70	80	30	20	20	20	20	20	10	10	10	310
	E7010 (Anti-mitotic)	20	30	35	20	30	10	10	5	5	5	5	175
	MMPI	20	30	35	20	23	15	15	5	5	5	5	178
		5	10	37	17	15	15	5	5	5	5	5	124
	kinase	15	25	35	33	15	15	5	5	5	5	5	163
	Total Projected Budget	385	315	264	202	170	142	112	77	67	67	67	1,868
	<u>Estimated Budget</u>	<u>327</u>	<u>250</u>	<u>201</u>	<u>134</u>	<u>90</u>	<u>81</u>	<u>66</u>	<u>45</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>1,314</u>

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TRANSACTION ANALYSIS

The structure of this transaction (which includes a diversified pool of eight Abbott compounds, and a tiered royalty structure) offers a substantial likelihood that we will receive a long-term bond equivalent yield of approximately 17.5% which is substantially greater than the inherent risk of the transaction.

Expected Return.

Methodology

Determining the fair economics of the proposed transaction is highly dependent upon the number of compounds included, the characteristics of the compounds (i.e. status of development, potential sales), the structure of the royalty rates, and an estimation of what is a fair return. To help us answer these questions, we have taken several steps. First, we have researched industry standards for likelihood of success and probable sales curves for compounds in different stages of development. Second, we have developed a spreadsheet model that calculates the rate of return for a chosen portfolio and have developed a minimum number of compounds and associated milestone/royalty payments to provide us with returns that adequately compensate us for the risk we are taking. Third, we have tried to determine what rate of return the capital markets would require for the level of risk that we are willing to take.

The Program Compounds consist of five of Abbott's late-stage development compounds and a basket of three pre-clinical cancer compounds. The late-stage compounds range from mid-Phase II to starting Phase-III. Peak annual sales for these compounds range from \$400 million to \$800 million. With the exception of the "cancer basket", the compounds are independent of each other. Our due diligence provided us with results consistent with Abbott's representations and expectations for the Program Compounds, although we have scaled back sales projections significantly.

Our scientific and market diligence for the portfolio of compounds consisted on a number of steps. As a first step, we received internal scientific and business write-ups from Abbott for each Program Compound. The material provided by Abbott demonstrated the scientific rationale for the compounds, results of clinical trials, and a competitive analysis. Through financial reports, we searched for all references to Abbott's compounds and all references to competitive compounds in the same class or same disease category. We used this information to evaluate the potential size of markets for the Program Compounds and their competitive landscape. We engaged Dr. Lynn Klotz to search the major drug and medical databases for scientific reports on the Program Compounds and competitive compounds in the same class or same disease category. We used this information to evaluate, from a scientific perspective, what research scientists had discovered about the Program Compounds from an efficacy and safety perspective. We also used this information to identify potential experts to contact for additional questions. Finally, Dr. Klotz contacted the experts on a non-disclosure basis (not revealing that we were looking at Abbott compounds) and asked the experts to assess the Program Compounds and any potential competitive products from an efficacy and market potential perspective. In summary, none of our diligence revealed any information that was materially different than what Abbott had provided to us.

Dr. Lynn Klotz is a former professor of Biochemistry and Molecular Biology at Harvard University and a former officer of two biotechnology companies, BioTechnica and Codon. Dr. Klotz is currently an independent consultant. His most recent assignment was as a member of a four-person team consulting with the President of Mississippi State University to provide a strategic plan for their Life Sciences Institute.

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Probabilities of Success

Based on the development stage of each compound, we assigned probabilities of success ("regulatory approval") and time to success for each compound. Our probabilities of success come from a 1995 study by Dr. Joseph A. DiMasi at the Tufts Center for the Study of Drug Development, and were modified based on our specific knowledge of the Program Compounds. Dr. DiMasi's study is generally accepted by the pharmaceutical industry as an accurate assessment of the probability of success and of the time and costs associated with drug development. Dr. DiMasi looked at a random sample of 93 compounds in four broad disease categories from 12 pharmaceutical companies that were first tested in humans between 1970 and 1982.

Dr. DiMasi's results are summarized below:

PROBABILITY OF SUCCESS

Entering Phase	NSAID	Cardio-vascular	Anti-infective	Neuro-pharm	All
I	22%	26%	30%	20%	23%
II	30%	41%	38%	22%	31%
III	71%	72%	77%	51%	63%

Dr. DiMasi calculated the average time to approval as 8.75 years for compounds entering Phase I, 7.5 years for compounds entering Phase II, and 5.5 years for compounds entering Phase III. Embedded in these times was an approximately 30-month review process by the FDA. Due to legislative and process changes, the average FDA review time is now approximately 12 months. A revised timeframe for approval (which was been published by TCSD in 1999), based on accelerated review by the FDA, and quicker processes within the pharmaceutical companies, is 6.0 years for Phase I, 5.0 years for Phase II, and 3.0 years for Phase III.

Sales Estimates

In estimating sales projections by Program Compound, we started with determining the expected peak sales for each Compound. We have conservatively estimated the peak sales for each Compound based on our evaluation of market potential for each Compound relative to results for other similar drugs and expected competitive drugs. In general, our level of peak sales is significantly below Abbott's level (approximately 25%) — but, because of the tiered royalty structure, the relative economic difference is not significant. Our next step was to use a Sales Curve calculated by Lehman Brothers that projects ramp-up and ramp-down for sizeable drugs. In general, this Curve shows peak sales being reached seven years after launch. Ramp-up is achieved by 5% of peak sales in the first year, followed by 13%, 25%, 50%, 80%, and 90%. Peak sales are maintained for three years, and the compound then achieves 85% of peak, 75%, 70%, etc. As expected, every compound has its own unique curve, and Lehman's is only a general estimate. We have compared the curve to IMS data of prescription sales for individual compounds in a number of drug classes from 1981 to 1999. Our analysis indicates that Lehman's curve is a good fit and we have applied that curve. The table below shows projected sales for each Compound and probability-weighted estimated sales for the entire portfolio of Compounds.

Financial Model and Results

We've modeled the returns on this portfolio of drugs using a Monte Carlo simulation and assuming their probabilities of success are independent. Let's start, however, with some simplifying assumptions to get better intuition on the risk of the transaction. Assume the probability of success of each drug is 50%, the drugs are independent, and that the success of any one drug will give us a return of 8% on the transaction. In this case, we will lose all our investment only if all the drugs fail. The probability of this is $(1/2)^6 = 1.6\%$. Spread over a 4 year duration, the expected annual loss is 40 basis points which implies the same risk as a Baa3 bond. If only one drug is successful, which should occur with the probability of $(1/2)^6 * (6/11) = 6/64 \approx 9.4\%$, the return, in our simplified model, is 8% on the entire investment. This is approximately 200 basis points over Treasuries. If two or more drugs are successful, the structure caps the investment's return at

approximately 20%. The probability of this is $100\% - 1.6\% - 9.4\% = 89\%$. Hence, the weighted average return on the investment is $1.6\%*0 + 9.4\%*8\% + 89\%*20\% = 18.5\%$.

This example is obviously a simplification. Each of the drugs has a different probability of success, depending upon how far along each is in the approval process, and a different revenue profile. To reflect the different probabilities and different revenue streams, we developed a spreadsheet model that incorporates multiple drug compounds (and their specific probability of success; time to launch, and expected sales pattern) and a variable milestone/royalty structure. We then ran the spreadsheet model 500 times to provide us a range of outcomes as well as the expected results for returns and losses.

In our base case, we have made the following assumptions:

Product	Phase	JH Probability Of Approval	Launch	JH Peak Sales
BPH	Phase III	65%	2003	\$600 mm
Ketolide	Phase III	70%	2003	\$800 mm
Endothelin	Phase III	70%	2003	\$700 mm
CCM	Phase II	50%	2004	\$700 mm
Antimilitotic	Phase I/II	40%	2004	\$500 mm
MMPI	Phase I	10%	2005	\$400 mm
FTI	PC	10%	2005	\$400 mm
Urokinase	PC	10%	2005	\$400 mm

... and calculated the average bond equivalent yield of this scenario to be approximately 17.3%. It is important to note that the expected IRRs are over a long period of time (15 years). Assuming that we could sell our future royalty stream after the fifth year, our five-year IRR would be about 22%.

Analysis of Return

The last step of our analysis was to determine what a fair economic return for this transaction should be. We have benchmarked this transactions in a number of ways, such as: R&D vehicles for pre-clinical compounds were sold with expected IRRs (over a three-to-five year period) of approximately 40%; Hambrecht & Quist has estimated pharmaceutical IRRs for single phase-II compounds to be 40% and single phase-III compounds to be 25%; the Palisade Partners (Sony movies) transaction that we participated in last year has an expected IRR of 20%; Elan Pharmaceuticals' pooled transaction has an expected five-year IRR of 13%; limited partner equity funds have about a 25% expected net IRR; and our proprietary analysis of the equity market's IRR for Abbott's entire R&D pipeline of 16-22%. Based on these comparisons, we think that an IRR of 17% over a long period of time is reasonable.

We also evaluated the relationship between our investment (and Abbott's) in the entire portfolio and the average royalty rate that we expect to receive - which is approximately 4-5%. We estimate that the current value of the compounds that Abbott is contributing to the transaction is about \$1 billion. During the four year investment period, Abbott expects to invest \$800 million on the compounds, in addition to our \$200 million. Based on these amounts, our investment is approximately 10% of the total invested dollars. Most pharmaceutical companies earn about a 50% pre-tax margin (excluding R&D expenses) on sales. On a net basis, then, our expected royalty and milestone percentage should be about 5%.

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Risk Analysis.

The fundamental risks of this transaction are whether Abbott receives marketing approval from the FDA for a sufficient number of the Program Compounds and whether the commercial success of the Compounds are as we expect. In developing the *expected return*, we have made a number of reasonable assumptions regarding the probability of obtaining FDA approvals, acceptance of the products in the marketplace and competition. In many cases, our assumptions are significantly more conservative than Abbott's.

Again looking at our base case (which is demonstrated in the Chart I on the next page), the probability of no successful drugs is approximately 1.7% (the bar on the left). There are also a number of scenarios that produce a return of approximately 1% - 2%. These scenarios arise when only a cancer drug is successful. The cancer drugs have lower anticipated revenues, as well as lower probabilities of success, than any of the other drugs. This represents about 1.6% of the scenarios. All other scenarios give us a return of 9% or more. Assuming a 1-2% return represents a loss of half our original investment, the expected loss in this simulation is $1.7\% + \frac{1}{2} \times 1.6\% = 2.5\%$. Spread over a four year duration, the annual expected loss is 62 basis points which corresponds to the risk of a Baa1 rated bond.

We also ran a downside simulation, where the probabilities of success are discounted by 25% from the DiMasi study and the expected revenues are discounted by 25% from our base case (this is shown in Chart II on the next page).

The average return in this downside scenario is 9.3%. The probability that no drugs are successful rises dramatically to 4.9%. The low return scenario is now even lower (-2%) and also has a higher probability (2.7%). So, the annual expected loss is $(4.9\% + .6 \times 2.7\%) / 4 = 1.65\%$ basis points which corresponds to the risk of a B1 rated bond.

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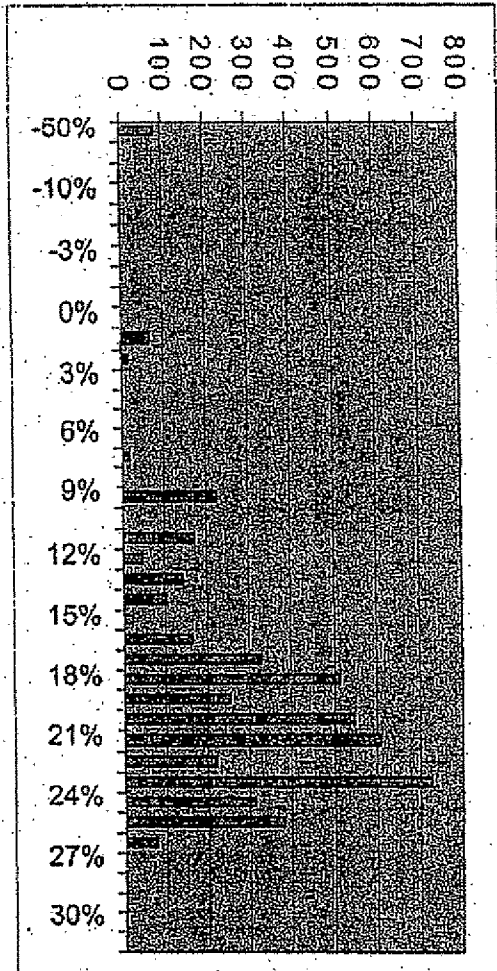


CHART I
BASE CASE

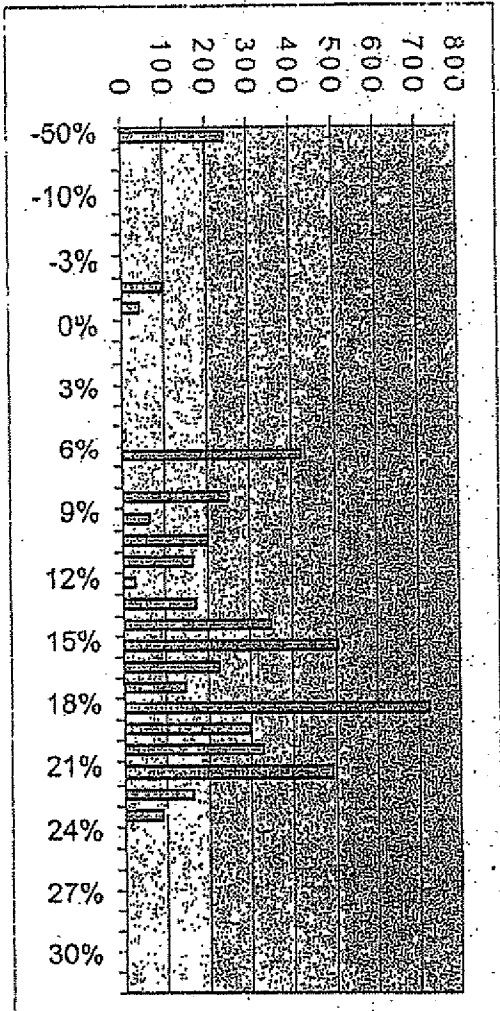


CHART II
DOWNSIDE SCENARIO

APPENDIX PRODUCT DESCRIPTIONS

ABT-980

ABT-980 is a selective alpha blocker for the treatment of benign prostatic hyperplasia ("BPH"), a disorder that affects approximately 10 million middle-aged and elderly males in the U.S. The primary symptom of BPH is obstruction of urinary outflow and increased frequency of urination. Global sales of BPH products is approximately \$2 billion and is expected to continue to grow as the population ages and as better treatments become available. Currently, alpha blockers, including Abbott's Hytrin which recently became generic, are the most frequently prescribed pharmaceutical treatment for BPH. ABT-980 has the benefit of other alpha blockers, but since it only inhibits alpha receptors in the urinary tract, side effects on the cardiovascular system and central nervous system are expected to be reduced substantially.

One other selective alpha blocker, Boehringer Ingelheim's Flomax, the FDA and has been on the market since 1999. Flomax's current sales are approximately \$300 million. Abbott completed Phase II clinical trials and entered Phase III trials this past summer. In its Phase II trials, Abbott demonstrated that it is effectively equivalent (based on safety and efficacy) to Flomax.

This month, Abbott has learned that in long-term studies with rats, that about 15% of the rats given ABT-980 developed gallstones. Abbott does not know if these results are applicable to humans and at what frequency; however, there is no evidence of gallstones in humans to-date. In addition to its usual clinical trials, Abbott will try to determine whether gallstones will develop in humans over the long-term and what implications that may have. If ABT-980 fails due to this gallstone issue, Abbott will replace ABT-980 with another compound.

Abbott expects to submit ABT-980 for approval in June 2002 and launch the product in August 2003. The patent on ABT-980 expires in 2016.

E-7010

E-7010 is a compound that Abbott licensed from Eisai Co. Ltd. in July 2000. E7010 has completed Phase I trials for various oncology applications. E7010 is an oral medication with a unique mechanism of action that enables it to stop cell mitosis with fewer side effects than current cytotoxic therapies. Although financial terms of the Abbott-Eisai agreement have not been publicly disclosed, Abbott is committing \$25 million in up-front and milestone payments to Eisai and will pay a double-digit royalty percentage on net sales. As a result of in-licensing E7010, Abbott has discontinued development of its own internally developed "anti-mitotic" compound.

Anti-mitotic compounds are not new. Taxol, the largest selling cancer drug, is an anti-mitotic. E7010, however, binds to a different site of a cell's microtubules than Taxol, and inhibits cell proliferation in a unique manner which is believed to cause fewer side effects.

E7010 has successfully completed Phase I clinical trials in Japan. These trials may be repeated in the U.S. but Abbott expects to move quickly into Phase II trials. Abbott expects to submit E7010 for approval in 2003 and launch the product in 2004. The patent on E7010 expires in 2011.

Our scientific consultants, Dr. Dennis A. Carson, UCSD School of Medicine, and Dr. John Kavanaugh, Jr., MD Anderson Cancer Center, did not have specific knowledge about the Abbott/Eisai compound. However, each researcher provided us with consistent critical benchmarks to evaluate the compound (such as whether the compound has been tested against specific cancer cell lines, whether the compound has been tested in combination with other anti-cancer agents. We have confirmed that Abbott independently addressed these critical benchmark and received positive results.

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ABT-773 (Ketolide)

ABT-773 is a member of a novel group of ketolide antibiotics within the macrolide group of antimicrobials. Ketolides have a similar mechanism of action to other macrolides such as Pfizer's Zithromax and Abbott's

Biaxin. Unlike macrolide antibiotics, ketolides are active against *s. pneumonia* and *h. influenza*. The antibiotics market size is approximately \$25 billion; macrolides account for approximately 13% and have an increasing market share. Only one ketolide (*Ketek*) is in advanced clinical trials; this compound, discovered by Aventis, was approved for sale in Europe and was been submitted to the FDA for approval in February 2000. Aventis expects to launch *Ketek* in 2001.

ABT-773 entered Phase III clinical trials this past summer. Abbott expects to submit ABT-773 for approval in June 2002 and launch the product in August 2003. The patent on ABT-773 expires in 2016.

Our scientific consultant, Dr. Robert C. Moellering, Jr., Harvard Medical School and Beth Israel Medical Center, confirmed the scientific rationale for ketolides and their market potential. Based on information that he has seen, Dr. Moellering believes that ABT-773 has more promise than Aventis' *Ketek*.

ABT-594

ABT-594 is a non-opioid, non-NSAID analgesic compound that is orally-administered for the treatment of diabetic neuropathic pain. In animal models, the compound has been shown to be substantially more potent than morphine with a better side effect profile. Neuropathic pain is a substantial and underserved market. Approximately 4-5 million people are thought to suffer from neuropathic pain but only a few medications provide complete pain relief and most medications have significant side effects. As more effective and tolerable medications become available, the neuropathic pain market is expected to experience significant growth.

ABT-594 is currently in Phase II clinical trials. If Phase II and Phase III trials are successful, Abbott expects to submit ABT-594 for approval in May 2003 and launch the product in July 2004. The patent on ABT-594 expires in 2016.

Our scientific consultant, Dr. Mitchell Max, NIH, eliminated an initial concern of ours that the "therapeutic window" of ABT-594 was too short and would potentially block approval. Dr. Max indicated that ABT-594's therapeutic window was acceptable. Dr. Max was not able to fully address toxicity issues raised by two of Abbott's competitors that the compound demonstrated opioid-like side effects in mice. These toxicity issues have not been found by Abbott in its mice or human trials; Dr. Max believed that ABT-594 showed a good profile in mice.

ABT-627

ABT-627 is an inhibitor of a family of endothelin peptides that cause constriction of vascular muscles and stimulate cell proliferation. ABT-627 is currently being developed by Abbott for the treatment of prostate cancer, and other cancer types.

Prostate cancer ("PCA") is the most common cancer to strike non-smoking men. Approximately 1.7 million men live with prostate cancer in the U.S., and there are approximately 180,000 newly diagnosed cases each year. The primary treatment of advanced stage PCA is hormone therapy. Patients receiving hormone therapy become resistant to this treatment after two to three years and then have a life expectancy of only about twelve months.

The primary benefit of ABT-627 is to reduce the pain associated with PCA and to delay the progression of the disease (but not necessarily improve survival).

ABT-627 is currently in Phase III clinical trials. If Phase III trials are successful, Abbott expects to submit ABT-627 for approval in December 2003 and launch the product in June 2004. The patent on ABT-627 expires in 2015.

Our scientific consultant, Dr. Joel Byron Nelson, MD, University of Pittsburgh, has indicated that ABT-627 is safe, significantly reduces pain associated with PCA, and delays disease progression.

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MMPI

MMPI is an inhibitor of enzymes called matrix metalloproteinase that degrade a wide range of protein substrates. High expression of these enzymes occurs in cancer and is associated with the ability of tumors to grow, invade, develop new blood vessels and metastasize.

The MMPI field is competitive. More than 30 firms have filed patents and several companies have compounds in advanced clinical development. Abbott's MMPI has the potential competitive advantage of a better side effect profile. It appears to exhibit less arthritis and tendonitis of the upper joints than its competitors. This compound is currently being evaluated in Phase I clinical trials.

Abbott hopes to submit MMPI for approval in 2004 and launch the product in 2005. The patent on MMPI expires in 2018.

FTI

FTI is an inhibitor of enzymes called farnesyltransferase that assist certain proteins, such as the Ras protein, which are critical for malignant growths.

The FTI field is competitive. Approximately four compounds are in clinical development, and an additional five are in pre-clinical studies. Abbott has not yet chosen a specific FTI to enter into human clinical trials. It expects to enter human clinical trials in 2001.

Abbott hopes to submit FTI for approval in 2004 and launch the product in 2005. The patent on FTI is not expected to expire prior to 2014.

Urokinase

Urokinase is an inhibitor of enzymes called urokinase which are believed to promote the metastases of tumors by breaking down cell membranes.

The Urokinase field is less well-developed than MMPI and FTI. No compound has currently made it into clinical trials. Abbott is currently evaluating several compounds. If Abbott fails to take a Urokinase compound into clinical trials, Abbott will substitute another Phase I compound into the Program.

Abbott hopes to submit Urokinase for approval in 2004 and launch the product in 2005. The patent on Urokinase is not expected to expire prior to 2014.

Our scientific consultant, Dr. Edward Sausville, National Cancer Institute, has indicated that "cytostatic" therapies such as MMPI, FTI and Urokinase may be useful upon recurrence of cancer as a means to stopping the progression of the disease. He believes that they will be useful in combination with other therapies and may not be exceptional compounds by themselves.

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PLs' LG

John Hancock Life Insurance Company
Boston, Massachusetts

Committee of Finance Records

October 10, 2000

A meeting of the Committee of Finance was held on this date, with Chairman Brown presiding.

Present: Messrs. Brown, D'Alessandro, Aborn, Gifford, Linde, Morton,
Syron and Tarr

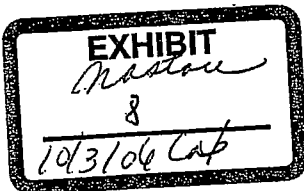
Also Present: Messrs. DeCiccio, Budd and Rubenstein, Secretary

REDACTED

The meeting was called to order by Chairman Brown. The minutes of the prior meeting were approved.

REDACTED

The Bond and Corporate Finance Group materials were presented by Roger Nastou. A question and answer period followed the presentation. See Attachment B for Votes approving investments with respect to Abbott Laboratories and Reports of Purchases, Sales, Modifications and Swaps approved between meetings. A Report of Bond and Corporate Finance Group Investments and Available Capacity in Below AA - Country Investments was submitted. Materials are on file with the Secretary.



Numerous transaction reports were submitted by the Company's investment managers. These are included in the minutes.

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Meeting of October 10, 2000

John Hancock Life Insurance Company
Committee of Finance Records

Page 4

Attachment B

VOTED:

\$ 99,000,000.
\$ 110,000,000.

To authorize purchase, at par, of up to

for the General Account, and up to
for the Guaranteed Benefit Sub Account.

ABBOTT LABORATORIES

\$220 Million Research and Development Funding Commitment

Subject to approval of all legal
details by our Law Department.

REDACTED

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Meeting of October 10, 2000

John Hancock Life Insurance Company
Committee of Finance Records

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There being no further business, the meeting was adjourned.

ATTEST:



SECRETARY

Also Attending:

Messrs./Mss. Acford, Agretelis, Atamian, Blewitt, Britt, Budde, Clark, Curtis, Davis, Della Piana, Felton, Freiburger, Garrison, Gottlieb, Haahsy, Han, Harris, Hartz, Henderson, Hines, Johnson, J., Lacasse, McAneny, McDonough, J., McDonough, K., McPadden, Mongeau, Nagle, Nastou, Navin, Nectow, Nierintz, Panthaki, Ray, Reitano, Revers, Santosuosso, Schaeffer, Stapleton, Steggall, Talbot, White, Wise and Yang.

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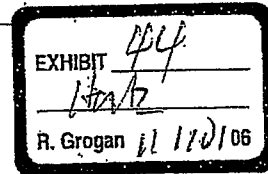
PLs' OE

3: abbott

Page 1 of 2

Gardner, Paul E.

From: Daesen, Deirdre [ddaesen@jhancock.com]
Sent: Tuesday, January 04, 2005 2:44 PM
To: McCormack, Steven; Wormuth, Laura
Cc: McWatters, Russell; Hartz, Scott; Davis, Willma; Blewitt, Stephen
Subject: RE: abbott



Correction: you should start accruing at a rate of 16% as of 1/1/05. That discount rate of 16% was used to come up with the impairment below.

-----Original Message-----

From: Daesen, Deirdre
Sent: Tuesday, January 04, 2005 12:29 PM
To: McCormack, Steven; Wormuth, Laura
Cc: McWatters, Russell; Hartz, Scott; Davis, Willma
Subject: FW: abbott

The purpose of this email is to correct the impairment amount being processed for Abbott Labs. You can see below that the amount of the 4Q impairment will be \$25.5 million, not \$28.0 million:

11/30/04 book value: \$111.49
Dec income (@ 15%): \$1.39
12/31/04 book value prior to impairment: \$112.9
Discounted value of cash flows: \$87.4
Impairment needed: \$25.5

The original book value of \$115.4 million that was quoted in the loan review was not correct, which created this discrepancy. Also, please note that you should start accruing income at a rate of 20% as of 1/1/05. Please let me know if you need anything else.

Deirdre

-----Original Message-----

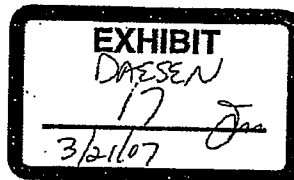
From: Wormuth, Laura
Sent: Tuesday, January 04, 2005 11:47 AM
To: Daesen, Deirdre
Subject: FW: abbott

-----Original Message-----

From: McWatters, Russell
Sent: Monday, January 03, 2005 8:47 AM
To: Wormuth, Laura
Subject: FW: abbott

FYI - Abbott Labs.

Russ



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JHII 011167

1/19/2006

3: abbott

Page 2 of 2

Russell A. McWatters, CFA
Portfolio Management
Bond & Corporate Finance
John Hancock Financial Services
(617)572-4428

-----Original Message-----

From: Davis, Willma
Sent: Tuesday, December 21, 2004 3:13 PM
To: Algure, Richard; McWatters, Russell; Soucy, Steve
Cc: Thomson, Warren (JH); Hartz, Scott
Subject: FW: abbott

We've refined the numbers on Abbott. Enclosed is a copy of the write-up which reflects the changes. The final amount is \$28 million. Please don't hesitate to call with questions.

Willma H. Davis
Senior Managing Director
Bond & Corporate Finance Group
John Hancock Tower T-57-08
Ph: 617-572-9625
Fax: 617-572-0073
e-mail: wdavis@jhancock.com

-----Original Message-----

From: Katsigianis, Mary S.
Sent: Tuesday, December 21, 2004 3:00 PM
To: Davis, Willma
Subject: abbott

<< File: Abbott Laboratories.doc >>

Mary S. Katsigianis
Administrative Assistant to Willma Davis & Marlene DeLeon
John Hancock Tower T-57-08
Tel: 617.572.9623
Fax: 617.572.0073
Email: mkatsigianis@jhancock.com

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1/19/2006